

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors: Michael J. Hammond; Gregory T. Reynolds
Assignee: Nanometrics Incorporated
Title: Focusing System and Method
Serial No.: 10/572,329 Filing Date: December 12, 2006
Examiner: Thong Q. Nguyen Group Art Unit: 2872
Docket No.: NAN138 US (8011) Confirmation No.: 1323

Saratoga, California
May 26, 2009

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Dear Sir:

This Appeal Brief is filed on behalf of the Appellants in the above-referenced case pursuant to the Notice of Appeal filed on March 3, 2009, and the Notice of Panel Decision and Pre-Appeal Brief Review dated April 30, 2009.

STATEMENT OF REAL PARTY IN INTEREST

The real party in interest is Nanometrics Incorporated, the assignee of record.

STATEMENT OF RELATED CASES

None

JURISDICTIONAL STATEMENT

The Board has jurisdiction under 35 U.S.C. §134(a). The Examiner mailed a final rejection on December 4, 2008, setting a three-month shortened statutory period for response. The time for responding to the final rejection expired on March 4, 2009. An after-final Amendment and Response to Office Action was filed on January 28, 2009. 37 CFR §1.134. An Advisory Action was mailed on February 18, 2009. Appellants filed a Notice of Appeal and Pre-Appeal Brief on March 3, 2009. 37 CFR §1.136. A Notice of Panel Decision from Pre-Appeal Brief Review was mailed on April 30, 2009. The time for filing an appeal brief is one month from the mailing date of the panel decision or the balance of the two-month period running from the receipt of the notice of appeal, whichever is greater. 1296

OG 67, 12 July 2005. The time for filing an appeal brief expired on May 30, 2009. The Appeal Brief is being filed on May 26, 2009.

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37 CFR §1.134	2
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4,025,785	
"Mueller"	7, 8
5,477,303	
"Goto"	7, 11

STATUS OF AMENDMENTS

An amendment to claim 9 filed on January 28, 2009, subsequent to the final rejection of December 4, 2008, was entered for purposes of appeal.

An amendment to the specification, including a substitute specification, filed on January 28, 2009, subsequent to the final rejection of December 4, 2008, was entered.

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1-8, 10, 12-14 and 16 are unpatentable under 35 U.S.C. §102(b) as being anticipated by Mueller (U.S. Patent No. 4,025,785).

Whether claim 17 is unpatentable under 35 U.S.C. §103(a) over Mueller (U.S. Patent No. 4,025,785) in view of Goto (U.S. Patent No. 5,477,303).

STATEMENT OF FACTS

1. Independent claim 1 addresses a “method of automatically focusing a microscope” in which the “reflected light is projected to the imaging system in which the reflected light is split into at least two images from eccentric sections of an imaging pupil differentially displaced from the optical axis” (Claim 1, lines 13-16).
2. Independent claim 12 addresses a microscope with an “imaging system comprising optics to split the reflected light into at least two images from eccentric sections of an imaging pupil differentially displaced from the optical axis” (Claim 12, lines 9-11).
3. In rejection claims 1-8, 10, 12-14 and 16, the Examiner cites Mueller (U.S. Patent No. 4,025,785) (hereinafter “Mueller”) (Office Action dated December 4, 2008, page 3, last paragraph).
4. The Examiner states “Mueller discloses ... a common objective lens (1) for focusing illuminating light onto an object (4); c) a focus and imaging system comprises a set of objective lenses (2, 3); dihedral mirrors or beamsplitters (20, 21)...” (Office Action dated December 4, 2008, page 4, lines 8-11).

5. The Examiner states in the Response to Arguments that “the objective lens (1) acts as an optics for splitting light reflected from a spot (17a) of an object (4) to an imaging system having a first imaging system 32, 33)...” (Office Action dated December 4, 2008, page 7, last paragraph).

6. Mueller discloses “an objective lens 1 common to both spectroscopic paths and the further objective lenses 2 and 3 for the divided paths of rays 250a and 250b” (col. 2, lines 59-62; Fig. 1).

7. Mueller discloses “The objectives 2 and 3 image the object 4 at the intermediate image planes 5 and 6” (col. 2, lines 62-63).

8. Mueller discloses that an infrared portion of the rays 250a and 250b are deflected by beam splitting mirrors 20 and 21 respectively (Fig. 1; col. 3, lines 18-26).

9. Mueller discloses that the “infrared radiation beams [are] deflected via mirrors 24 and 25” and ultimately “the beams impinge on the two photoelectric detectors 32 and 33” (Fig. 1; col. 27-35).

10. The Examiner stated in the Response to Arguments that “applicant’s arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further they do not show how the amendments

avoid such references or objections.” (Office Action dated December 4, 2008, page 7, 2nd paragraph).

11. Appellant’s Office Action dated August 29, 2008, stated “claims 1 and 12 are clear that the reflected light is split into the two images from eccentric sections of the imaging pupil within the imaging system. Mueller, on the other hand, does not split the reflected light, as recited in claims 1 and 12” (Amendment and Response to Office Action dated August 29, 2008, page 10, last paragraph).

12. The Examiner stated in the Response to Arguments that “Applicant should note that the claims 1-8, 10, 12-14 and 16 have not recited any specific limitation(s) related to the component(s) used to split the reflected light” (Office Action dated December 4, 2008, page 7, lines 17-19).

13. Claim 1-8 and 10 are directed to a “method” (claim 1, first line).

14. Independent claim 12, from which claims 13-14 and 16 depend, recites “optics to split the reflected light” (claim 12, lines 9-10).

15. The Examiner stated in the Response to Arguments that “Regarding the feature recited in claim 14” Mueller discloses an imaging system that “clearly includes a pair of beamsplitter or dihedral mirror” (Office Action dated December 4, 2008, page 8, lines 1-2).

16. Claim 14 recites “wherein the optics to split the reflected light into at least two images from eccentric sections of the imaging pupil comprises a dihedral mirror” (claim 14).
17. Claim 14 does not recite a “beamsplitter” (claim 14).
18. The Examiner stated in the Allowable Subject Matter that “Such use of a dihedral mirror is not disclosed in the microscope provided by the mentioned Patents.” (Office Action dated December 4, 2008, page 6, line 22 through page 7, line 2.)
19. In rejection claim 17, the Examiner cites Mueller in view of Goto (U.S. Patent No. 5,477,303) (hereinafter “Goto”) (Office Action dated December 4, 2008, page 5, penultimate paragraph).
20. The Examiner cites to Goto as disclosing “a beam splitter or a retractable mirror for diverting light from an object to either a first imaging system or a second imaging system” (Office Action dated December 4, 2008, page 6, lines 3-4).
21. The Examiner does not cite to Goto as disclosing splitting the reflected light “into at least two images from eccentric sections of an imaging pupil differentially displaced from the optical axis”. (Office Action dated December 4, 2008, page 5, line 17 through page 6, line 10.)

ARGUMENT

Rejection of 35 U.S.C. §102(b) over Mueller

Claims 1, 2, 5-8, 10, 12, 13, 16

Independent claim 1 addresses a method in which the “reflected light is projected to the imaging system in which the reflected light is split into at least two images from eccentric sections of an imaging pupil differentially displaced from the optical axis”. Independent claim 12 addresses a microscope with “the imaging system comprising optics to split the reflected light into at least two images from eccentric sections of an imaging pupil differentially displaced from the optical axis”.

With respect to the rejection under §102, claims 1, 2, 5-8, 10, 12, 13 and 16 stand or fall together.

The Examiner states that Mueller discloses claims 1 and 12 and specifically Muller discloses “a common objective lens (1) for focusing illuminating light onto an object (4); c) a focus and imaging system comprises a set of objective lenses (2, 3); dihedral mirrors or beamsplitters (20, 21)...” (Office Action dated May 1, 2008, page 11, lines 20-23; and Office Action dated December 4, 2008, page 4, lines 8-11). In response,

Appellants previously pointed out to the Examiner why the Examiner is believed to have erred. (Amendment and Response to Office Action dated August 29, 2008, page 10, line 26 to page 11, line 3.) The response is that claims 1 and 12 require that “the reflected light is split into at least two images from eccentric sections of an imaging pupil differentially displaced from the optical axis”. Mueller, on the other hand, does not split the reflected light, as recited in claims 1 and 12. Mueller instead uses objectives 2 and 3 to “image the object 4 at the intermediate image planes 5 and 6” which correspond to “intermediate image planes 28 and 29”. Col. 2, lines 62-63 and col. 3, lines 31-33. Mueller discloses that blades 26 and 27 are used to “partially block the respective fields of view in the vicinity of the intermediate image planes 28 and 29” and relies on the shifting of the paths of the rays in front of the objective lens 1 when the object 4 is moved out of the focal plane. Col. 3, lines 27-32 and see col. 3, line 58 to col. 4, lines 4. Thus, Mueller does not split the reflected beam “into at least two images from eccentric sections of an imaging pupil” as recited in claims 1 and 12.

In the Response to Argument section of the Office Action dated December 4, 2008, the Examiner stated “applicant’s arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the

state of the art disclosed by the references cited or the objections made. Further they do not show how the amendments avoid such references or objections.” (Office Action dated December 4, 2008, page 7, 2nd paragraph). In response, Appellants previously pointed out to the Examiner why the Examiner is believed to have erred. (Amendment and Response to Office Action dated January 28, 2009, page 7, lines 21-30) The response is that Appellant’s Office Action dated August 29, 2008, identified a feature that is recited in the independent claims, e.g., the “the reflected light is split into at least two images from eccentric sections of an imaging pupil differentially displaced from the optical axis”, and explained why Mueller does not disclose at least this feature.

In the Response to Argument section of the Office Action dated December 4, 2008, the Examiner stated Mueller discloses splitting the reflected light as “the objective lens (1) acts as an optics for splitting light reflected from a spot (17a) of an object (4) to an imaging system having a first imaging system 32, 33)...” (Office Action dated December 4, 2008, page 7, lines 12-17). In response, Appellants previously pointed out to the Examiner why the Examiner is believed to have erred. (Amendment and Response to Office Action dated January 28, 2009, page 8, line 4 to page 9, line 4). The response is that the Examiner’s position 1) either lacks a factual

basis or is based on improper claim interpretation; and 2) fails to make a prima facie case.

Lack of Factual Basis

The objective lens 1 of Mueller, in fact, does not “split” the light reflected from the spot 17a of an object 4. An objective lens focuses light and produces a real image of the object being observed. In fact, it is not the objective lens 1 by itself that presents images of the object 4 at the intermediate image planes 5 and 6, but is the combination of objective lens 1 with additional objective lenses 2 and 3. Col. 2, lines 58-68 and Fig. 1. The objective lenses 2 and 3 are offset from the center of the objective lens 1 and thus, produce images of the object 4 at slightly different perspectives, which explains why Mueller refers to his system as a “stereoscopic microscope”.

See, Title, and col. 2, lines 58-68. The objective lens 1 and objective lenses 2 and 3, however, do not “split” the reflected light ... into at least two images” as recited in claims 1 and 12. Instead, Mueller discloses the use of objective lenses 2 and 3, with objective lens 1, to image the object 4 from two different perspectives. Thus, contrary to the Examiner’s statement, Mueller does not disclose “the reflected light is split into at least two images from eccentric sections of an imaging pupil” as recited in claim 1 or “optics to split the reflected light into at least two images from eccentric sections of

an imaging pupil” as recited in claim 12. There is no factual basis for the Examiner’s position that the objective lens (1) acts as an optic for splitting light.

Improper Claim Interpretation

Appellants submit that to maintain the Examiner’s position requires ignoring the explicitly recited term “split”. Mueller uses objective lens 1 (and objective lenses 2 and 3) to image the object from different perspectives. An object lens does not “split” light. Thus, to maintain the Examiner’s position requires that the term “split” be ignored, which is improper.

No *Prima Facie* Case

Additionally, Appellant’s independent claims 1 and 12 both require that the reflected light is split into the two images within the imaging system. For example, independent claim 1 recites the “reflected light is projected to the imaging system in which the reflected light is split into at least two images ...” and independent claim 12 recites “the imaging system comprising optics to split the reflected light into at least two images....”

As discussed above, the Examiner’s rejection is based on “the objective lens (1) acts as an optics for splitting light reflected from a spot (17a) of an object (4) to an imaging system” Even if one were to accept

the Examiner's position that the objective lens 1 splits the reflected light and provides that light an imaging system, which Appellants do not, Mueller still does not anticipate independent claims 1 and 12 as Mueller does not disclose splitting the reflected light within the imaging system.

Appellants point out that the Examiner does not interpret Mueller as disclosing that the object lens 1 is part of the imaging system. The Examiner states "the objective lens (1) acts as an optics for splitting light reflected from a spot (17a) of an object (4) to an imaging system", clearly indicating that the objective lens 1 and the imaging system are separate elements. Moreover, an interpretation that the "objective lens" is part of the "imaging system" would be improper because both claims 1 and 12 recite an "objective lens" and "an imaging system" separately, thereby indicating that these elements are distinct. If the "objective lens (1)" of Mueller is considered part of the "imaging system," then Mueller fails to disclose an objective lens that is separate from the imaging system as required by claims 1 and 12.

In the Response to Argument section of the Office Action dated December 4, 2008, the Examiner also stated that "Applicant should note that the claims 1-8, 10, 12-14 and 16 have not recited any specific limitation(s) related to the component(s) used to split the reflected light". (Office Action

dated December 4, 2008, page 7, lines 17-19). In response, Appellants previously pointed out to the Examiner why the Examiner is believed to have erred. (Amendment and Response to Office Action dated January 28, 2009, page 9, lines 5-13). The response is that claims 1-8, and 10 are directed to a method, not an apparatus, and thus, the physical component that performs the act need not be recited. Further, claim 12 recites “the imaging system comprising optics to split the reflected light into at least two images”, which includes the component used to split the reflected light. Moreover, dependent claim 14 further recites that “wherein the optics ... comprises a dihedral mirror”, which again is a specific limitation related to the component used to split the reflected light. Accordingly, Appellants submit that specific limitations related to the components used to split the reflected light are recited.

Thus, Appellants respectfully submit that independent claims 1 and 12 are patentable over Mueller. Reconsideration and reversal of this rejection is respectfully requested.

Claims 2, 5-10 and 16 depend from claim 1 and claims 13 and 17 depend from claim 12 and therefore claims 2, 5-10, and 13 are likewise patentable for at least the same reasons.

Claims 3-4

The Examiner states that Mueller discloses claims 3 and 4 and specifically Muller discloses “a detecting system comprises detectors (32,33)....” (Office Action dated May 1, 2008, page 11, line 25; and Office Action dated December 4, 2008, page 4, line 12). In response, Appellants previously pointed out to the Examiner why the Examiner is believed to have erred. (Amendment and Response to Office Action dated August 29, 2008, page 11, 8-10 and Amendment and Response to Office Action dated January 28, 2009, page 9, lines 19-21). The response is that claim 3 recites “projecting the images onto a single imaging means within the imaging system”. Mueller, on the other hand, discloses the use of two separate photoelectric detectors 32 and 33. Col. 3, lines 32-40. Thus, a *prima facie* case has not been made with respect to claim 3. Claim 4 depends from claim 3 and is patentable for at least the same reason.

Claim 14

The Examiner states that Mueller discloses claim 14 and specifically Muller discloses “dihedral mirrors or beamsplitters (20, 21)...” (Office Action dated May 1, 2008, page 11, line 23; and Office Action dated December 4, 2008, page 4, line 11). In response, Appellants previously

pointed out to the Examiner why the Examiner is believed to have erred. (Amendment and Response to Office Action dated August 29, 2008, page 11, lines 11-14 and Amendment and Response to Office Action dated January 28, 2009, page 9, lines 22-31.) The response is that claim 14 recites that “the optics to split the reflected light into at least two images from eccentric sections of the imaging pupil comprises a dihedral mirror.” Mueller, on the other hand, does not disclose splitting the reflected beam into the two images from eccentric sections of the imaging pupil, much less, using a dihedral mirror to do so.

In the Response to Argument section of the Office Action dated December 4, 2008, the Examiner stated Mueller includes a “first imaging system which is [sic] clearly includes a pair of the beamsplitter or dihedral mirror”. (Office Action dated December 4, 2008, page 8, lines 1-2). In response, Appellants previously pointed out to the Examiner why the Examiner is believed to have erred. (Amendment and Response to Office Action dated January 28, 2009, page 9, lines 22-31.) The response is that Mueller does not disclose a dihedral mirror. In fact, the Examiner recognizes that Mueller fails to disclose a dihedral mirror in the allowance of claim 9. In the section titled “Allowable Subject Matter” in the Office Action dated December 4, 2008, the Examiner stated “Such use of a dihedral

mirror is not disclosed in the microscope provided by the mentioned Patents.” Thus, Appellants submit that a *prima facie* case has not been made with respect to claim 14 and claim 14 should be allowable for at least the same reasons that claim 9 has been indicated as being allowable.

Rejection of 35 U.S.C. §103(a) over Mueller in view of Goto

Claim 17

The Examiner states that Mueller in view of Goto discloses claim 17 and specifically that Mueller does not disclose the use of “selective optics to divert reflected light” but that Goto discloses “the use of a beam splitter or a retractable mirror for diverting light from an object to either a first imaging system or a second imaging system”. (Office Action dated December 4, 2008, page 5, line 19 to page 6, line 4). Appellant’s response includes a new argument that has not been previously presented to the Examiner. The response is that Goto does not make up for the deficiencies of Mueller described above. Accordingly, Claim 17 is patentable over the combination of Mueller in view of Goto for at least the same a reasons that claim 12 is patentable over Mueller.

APPENDIX

CLAIMS SECTION

1. (Rejected) A method of automatically focusing a microscope having a light source, an objective lens, a light path to direct incident light through the objective lens to be reflected by an object, an aperture to limit the spatial extent of the incident light and serve as an illumination pupil, a light path to direct at least some of the reflected light to an imaging system, and an imaging system to image the reflected light so directed, the method comprising: directing a beam of light from a light source through an objective of a microscope system to an object whereby light is reflected from the surface thereof; collecting at least some of the light reflected thereby and directing the same to an imaging system, wherein the incident beam of light is limited in spatial extent by imaging an aperture to form an illumination pupil, a centroid of illumination of the illumination pupil is aligned with an incident optical axis, and reflected light is projected to the imaging system in which the reflected light is split into at least two images from eccentric sections of an imaging pupil differentially displaced from the optical axis, and wherein the separation of the images thereby produced is determined to provide an indication of a focus condition.

2. (Rejected) The method of claim 1 wherein an illumination beam is injected into the top focal plane of the objective limited in its spatial extent and bounded by imaging an aperture so as to form an illumination in the top focal plane of the objective.
3. (Rejected) The method of claim 2 comprising the formation of a plurality of images of the object using sections of the imaging pupil with differing eccentricities and projecting the images onto a single imaging means within the imaging system.
4. (Rejected) The method of claim 3 wherein the imaging means comprises a single detector array.
5. (Rejected) The method of claim 1, further comprising successively repeating actions to obtain separate pairs of images from eccentric sections of the imaging pupil, measurements of the separation of the successive pairs of images being used as part of iterative process to improve the accuracy of the focus condition.

6. (Rejected) The method of claim 1 wherein the light source that is used to produce the light beam that is reflected and directed to the imaging system the same light source as used for metrology.

7. (Rejected) The method of claim 1 wherein a beam splitter is used to extract light reflected from the object and direct the same towards the imaging system and a primary observational optical system, the imaging system being separate from the primary observational optical system which is used to image the object, obtain metrology data or other measured data therefrom.

8. (Rejected) The method of claim 1 comprising investigating the focus condition and subsequently conducting observation and/or measurement of the object.

9. (Allowed) A method of automatically focusing a microscope having a light source, an objective lens, a light path to direct incident light through the objective lens to be reflected by an object, an aperture to limit the spatial extent of the incident light and serve as an illumination pupil, a light path to direct at least some of the reflected light to an imaging system, and an

imaging system to image the reflected light so directed, the method comprising: directing a beam of light from a light source through an objective of a microscope system to an object whereby light is reflected from the surface thereof; collecting at least some of the light reflected thereby and directing the same to an imaging system, wherein the incident beam of light is limited in spatial extent by imaging an aperture to form an illumination pupil, a centroid of illumination of the illumination pupil is aligned with an incident optical axis, and reflected light is projected to the imaging system in which the reflected light is split into at least two images from eccentric sections of an imaging pupil differentially displaced from the optical axis, and wherein the separation of the images thereby produced is determined to provide an indication of a focus condition, the method further comprising using a dihedral mirror to split the imaging pupil into the at least two images formed on different sections of an imaging means within the imaging system.

10. (Rejected) The method of claim 1 wherein a field stop is provided as the aperture to limit the spatial extent of the incident light in the beam of light from the light source.

11. (Canceled)

12. (Rejected) A microscope comprising:

a light source;

an objective lens and a first light path to direct incident light from the light source through the objective lens to be reflected by an object;

an aperture that limits the spatial extent of the incident light and serves as an illumination pupil with the centroid of illumination from the illumination pupil on an optical axis;

an imaging system and a second light path to direct reflected light from the object to the imaging system the imaging system comprising optics to split the reflected light into at least two images from eccentric sections of an imaging pupil differentially displaced from the optical axis, and a camera to measure the separation of the images thereby produced to provide an indication of a focus condition; and

a control system to adjust mechanically the separation of the object from the objective lens.

13. (Rejected) A microscope in accordance with claim 12 wherein the imaging system is provided to determine optimal focus position in a first

focusing step, the microscope comprising a second imaging system for subsequent observational step, and a beam splitter disposed between the imaging system and the second imaging system to divert reflected light from the object partially to both the imaging system and the second imaging system.

14. (Rejected) A microscope in accordance with claim 12 wherein the optics to split the reflected light into at least two images from eccentric sections of the imaging pupil comprises a dihedral mirror.

15. (Canceled)

16. (Rejected) The method of claim 5, further comprising obtaining the focus condition varying spatially across an object to determine a degree of deviation from planarity.

17. (Rejected) A microscope in accordance with claim 12 wherein the imaging system is provided to determine optimal focus position in a first focusing step, the microscope comprising a second imaging system for subsequent observational step, and selective optics disposed between the

imaging system and the second imaging system to divert reflected light from the object selectively to either the imaging system or the second imaging system.

CLAIM SUPPORT AND DRAWING ANALYSIS

Page and line numbers referred to herein are based on the substitute specification submitted on January 28, 2009, which has been entered. A replacement page for the only figure (Fig. 1) was entered on August 29, 2008. All reference to the drawings are to Fig. 1 in the replacement page.

1. A method of automatically focusing a microscope having a light source {21}, an objective lens {25}, a light path to direct incident light through the objective lens to be reflected by an object {26a}, an aperture {33} to limit the spatial extent of the incident light and serve as an illumination pupil, a light path to direct at least some of the reflected light to an imaging system {27, 28, 29 and 11, collectively}, and an imaging system to image the reflected light so directed {page 11, lines 7-18}, the method comprising: directing a beam of light from a light source {21} through an objective {25} of a microscope system to an object {26a} {page 11, lines 7-9} whereby light is reflected from the surface thereof {page 11, lines 9-10}; collecting at least some of the light reflected thereby and directing the same to an imaging system {page 8, lines 1-7; page 11, lines 10-15}, wherein the incident beam of light is limited in spatial extent by imaging an aperture {33} to form an

illumination pupil {**page 8, lines 1-7; page 11, lines 17-18**}, a centroid of illumination of the illumination pupil is aligned with an incident optical axis {**page 6, lines 25-28**}, and reflected light is projected to the imaging system in which the reflected light is split into at least two images {**31, 32**} from eccentric sections of an imaging pupil differentially displaced from the optical axis {**page 8, lines 1-7; page 11, lines 10-15**}, and wherein the separation of the images thereby produced is determined to provide an indication of a focus condition {**page 5, lines 25-28; page 11, line 28 to page 12, line 1**}.

3. The method of claim 2 comprising the formation of a plurality of images {**31, 32**} of the object {**26a**} using sections of the imaging pupil {**33**} with differing eccentricities and projecting the images onto a single imaging means {**11**} within the imaging system {**page 10, lines 18-20; page 11, line 3 and lines 13-15**}.

12. A microscope comprising:

a light source {**21**};

an objective lens {25} and a first light path to direct incident light from the light source {21} through the objective lens {25} to be reflected by an object {26a} {page 11, lines 7-10};

an aperture {33} that limits the spatial extent of the incident light and serves as an illumination pupil with the centroid of illumination from the illumination pupil on an optical axis {page 6, lines 14-28; page 11, lines 17-18};

an imaging system {27, 28, 29 and 11, collectively} and a second light path to direct reflected light from the object {26a} to the imaging system the imaging system comprising optics {28} to split the reflected light into at least two images {31, 32} from eccentric sections of an imaging pupil differentially displaced from the optical axis {page 8, lines 1-7; page 11, lines 10-15}, and a camera {11} to measure the separation of the images thereby produced to provide an indication of a focus condition {page 5, lines 25-28; page 11, line 28 to page 12, line 1}; and

a control system {CS} to adjust mechanically the separation of the object from the objective lens {page 6, lines 7-9}.

14. A microscope in accordance with claim 12 wherein the optics {28} to split the reflected light into at least two images {31, 32} from eccentric

sections of the imaging pupil comprises a dihedral mirror **{28}** **{page 11, lines 18-15}**.

17. A microscope in accordance with claim 12 wherein the imaging system **{27, 28, 29 and 11, collectively}** is provided to determine optimal focus position in a first focusing step **{page 11, lines 1-5}**, the microscope comprising a second imaging system **{13, 35, 36, collectively}** for subsequent observational step **{page 12, lines 9-11}**, and selective optics **{15}** disposed between the imaging system and the second imaging system to divert reflected light from the object selectively to either the imaging system or the second imaging system **{page 10, lines 11-16; page 12, lines 10-11}**.

MEANS OR STEP PLUS FUNCTION ANALYSIS SECTION

None.

EVIDENCE SECTION

None

RELATED CASE SECTION


None

SIGNATURE BLOCK

For the above reasons, Appellants respectfully request reversal of the rejection of claims 1-8, 10, 12-14, and 16-17. The Commissioner is hereby authorized by the undersigned to debit Deposit Account 50-2263 for any underpayment or any additional fees deemed necessary including extension fees. Should there be any questions concerning this Appeal Brief, please contact the undersigned.

Respectfully submitted,

Dated: May 26, 2009

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